

PERFECT COMBUSTION OF CARBONIC FUEL BY ADDITION OF OZONE

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Abstract

PURPOSE:To economize energy and resources and prevent public nuisance by feeding the air rich in ozone to an intake pipe and an exhaust pipe perfectly combustion fuel, and making exhaust gas clean.

CONSTITUTION:When the intake air which passes through a cleaner 1 is introduced into an engine 6 through an intake pipe 2, a portion of the oxygen in the intake air is ozonized, and the ozone air is formed in an ozone generator 3 installed therebetween. The gasoline supplied from a carburetor 5 is added, and explosion combustion is carried out in the engine 6. Further, when the ozone air 10 supplied from an ozone generator 9 which is separately installed from the ozone generator 3 is mixed into the exhaust gas 8 which is discharged into an exhaust pipe 7 from the engine 6, in a venturi part 11 installed in the exhaust pipe 7, the uncombusted or the imperfectly combusted fuel in the exhaust gas 8 is oxidized and combusted in cooperation with a catalytic converter 12, and discharged into the air through an exhaust port 13.

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TRANSLATION

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[Title of the Invention] Complete Combustion of Carbon fuel by Addition of Ozone

[Abstract]

[Purpose] In a carbon fuel combustion engine, fuel is completely combusted to economize energy and resources, and its exhaust gas is made clean to prevent pollution.

[Constitution] All or a part of intake air is passed through an ozone generator and ozonized to enhance oxidizability thereof, thereby accomplishing complete combustion. Ozonized air is introduced into the exhaust gas to combust an uncombusted or incompletely combusted fuel completely.

[Scope of Patent Claims]

[Claim 1] A method and a device in a carbon fuel combustion engine for completely combusting the fuel to economize energy and to make the exhaust gas clean by ozonizing oxygen in intake air.

[Claim 2] A method and a device in a carbon fuel combustion engine for oxidizing uncombusted or incompletely combusted fuel to make the exhaust gas clean by adding ozone to the exhaust gas.

[Detailed Description of the Invention]

[Industrial Applicability]

Ozone enhances its oxidizability and allows almost complete combustion of a fuel when introduced into intake and exhaust pipes of a gasoline engine or the like of a vehicle, resulting in an improvement in fuel efficiency, energy economization, purification of exhaust gas and prevention of pollution.

[Prior Art]

Conventionally, only ordinary air is introduced into

an engine and ozone is not introduced thereto. Thus, the combustion is slow and the fuel efficiency is poor. Moreover, a large amount of incomplete combusted fuel is exhausted and causes pollution.

[Problems to be Solved by the Invention]

To combust fuel more completely without decreasing power in order to improve fuel efficiency, economize fuel and purify exhaust gas.

[Means to Solve the problems]

Conventionally, there have been taken a variety of measures such as an increase in compression ratio, an increase in intake air supply ratio or combustion in a subchamber. However, the problem boils down to the means for complete combustion and can be solved by activating oxygen in intake air, namely, by ozonizing the intake air.

[Functions]

All oxygen in air passed through an ozone generator is not necessarily converted to ozone. However, when air enriched with ozone (which will be hereinafter referred to as "ozone air") is supplied into intake and exhaust pipes, the fuel and the exhaust gas are efficiently oxidized and can be combusted more completely, resulting in an improvement in fuel efficiency and purification of exhaust gas.

[Examples]

Referring to the drawings, description will be hereinafter made taking a gasoline engine as an example. As shown in Fig. 1, when intake air is passed through a cleaner (1) and introduced into an engine (6) through an intake pipe (2), a part of oxygen in the intake air is ozonized in an ozone generator (3) installed therebetween, thereby producing ozone air (4). Gasoline supplied from a carburetor (5) is added to this and explosive combustion is carried out in the engine (6). The gasoline can be

combusted more completely since ozone can provide higher oxidizability as compared with the case of oxygen only.

As shown in Fig. 2, when ozone air (10) generated in an ozone generator (9), which is different from the above one, is mixed, at a venturi part (11), into an exhausted gas (8) exhausted from the engine (6) into an exhaust pipe (7), uncombusted or incompletely combusted fuel in the exhaust gas (8) is oxidized and combusted in cooperation with a catalytic converter (12), and then exhausted into the air through an exhaust port (13). The electric power for the ozone generators may be taken from an on-board battery or a high-voltage ignition coil. It is possible that all the intake air is not passed through the ozone generator but a venturi part is provided at a part of the intake pipe so that the ozone air may be sucked by a negative pressure.

[Effects of the Invention]

When complete combustion is accomplished by ozonizing intake air, the further addition of ozone to the exhaust gas is not necessarily needed. Complete combustion of fuel requires smaller amount of fuel to obtain the same power so that there can be accomplished an improvement in fuel efficiency, namely, economization of energy and resources, thereby contributing to decrease of CO₂ and purification of exhaust gas, namely, prevention of pollution. Additionally, when ozone is added to exhaust gas, uncombusted fuel is oxidized and combusted so that the exhaust gas is purified. When complete combustion is accomplished, no soot or tar is accumulated and thus the device is not subjected to abrasion so that the maintenance thereof can be facilitated and the service life thereof can be elongated.

[Brief Description of Drawings]

[Fig. 1] is a schematic view of an air intake system.

[Fig. 2] is a schematic view of an air exhaust system.

- 1 cleaner
- 2 air intake pipe
- 3 ozone generator
- 4 ozone enriched air
- 5 carburetor
- 6 engine
- 7 exhaust pipe
- 8 exhaust gas
- 9 ozone generator (different from 3)
- 10 ozone enriched air (different from 4)
- 11 venturi part
- 12 catalytic converter
- 13 exhaust port

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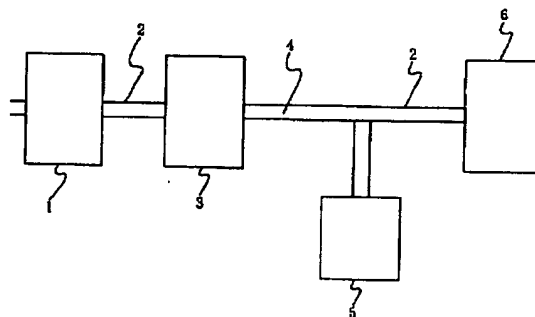
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(54) 【発明の名称】 オゾン添加による炭素系燃料の完全燃焼

(57) 【要約】

【目的】 炭素系燃料の燃焼機関において、燃料を完全燃焼させて、省エネルギー、省資源とし、排気ガスをクリーンにして、公害を防止する。

【構成】 そのため、吸気の全部又は一部をオゾン発生機を通過させてオゾン化し、酸化力を増大して完全燃焼させる。又、排気ガス中にオゾン化した空気を導入して、燃料の未燃焼又は、不完全燃焼部分を完全燃焼させる。



1

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【特許請求の範囲】

【請求項1】炭素系燃料の燃焼機関において、吸気中の酸素をオゾン化することにより、燃料を完全燃焼し省資源と排気ガスをクリーンにする方法と装置

【請求項2】炭素系燃料の燃焼機関において、排気ガスにオゾンを追加することにより、未燃焼乃至不完全燃焼燃料を酸化して排気ガスをクリーンにする方法と装置

【発明の詳細な説明】

【産業上の利用分野】自動車のガソリンエンジンなどの吸排気管にオゾンを追加すると、酸化力が増大するから完全燃焼により近くなるので、燃費の向上、省エネ、排気ガスのクリーン化、公害防止になる。

【従来の技術】従来エンジンには通常の空気のみで、オゾンは添加されておられない。従って燃焼は鈍く、燃費は悪く、多くの不完全燃焼燃料が排出されて公害の原因になっている。

【発明が解決しようとする課題】燃費の向上、省エネ、排気ガスのクリーン化のため、馬力を落とさず燃料を、より完全燃焼させること。

【課題を解決するための手段】従来、圧縮比のアップ、空燃比のアップ、副室燃焼など種々の方法がとられているが、要は燃料の完全燃焼の手段の問題で、吸気中酸素の活性化、即ち吸気をオゾン化することで解決出来る。

【作用】オゾン発生機を通過した空気中の酸素がすべてオゾンに変化するわけではないが、オゾンに富んだ空気（以下オゾン気と略）を吸気及び排気管に供給することにより、燃料及び排気ガスが効率よくオゾンで酸化されるから、より完全燃焼し、結果燃費の向上、排気ガスのクリーン化になる。

【実施例】以下に図面を参照し、ガソリンエンジン車を例にして説明する。(図1)において、まずクリーナー(1)を通過した吸気は吸気管(2)を経てエンジン(6)に至るが、その間に設置されたオゾン発生機(3)の中で、吸気中の酸素の一部がオゾン化されオゾン気(4)となる。そこにキャブレター(5)からのガソリンが添加されエンジン(6)の中で爆発燃焼がおこる。その際従来の酸素だけよりオゾンの方が酸化力が強烈だからガソリンはより完全燃焼する。(図2)において、エンジン(6)から排気管(7)中に排出された排

気ガス(8)に、先のオゾン発生機(3)とは別のオゾン発生機(9)からのオゾン気(10)を、排気管(7)に設けられたベンチュリー部(11)で混入すると、排気ガス(8)中の未燃焼乃至不完全燃焼燃料が触媒コンバーター(12)との協力でより酸化燃焼され、排気口(13)から大気中に排出される。オゾン発生機の電源は車載バッテリーからでも、高圧のイグニッションコイルから取ることも出来る。吸気の全部をオゾン発生機に通さず、吸気管の一部にベンチュリー部を設けて、オゾン気を負圧で吸引させることも可能である。

【発明の効果】吸気のオゾン化により、完全燃焼が達成されれば、排気への更なるオゾンの添加は必ずしも必要ではない。燃料を完全燃焼すると云うことは、同馬力を得るためになら燃料が少なくても良いと云うことであるから、燃費の向上即ち省エネルギー、省資源となり、これだけでもCO₂の減量、排気ガスのクリーン化即ち公害防止になる。更に排気管中にもオゾンを追加すれば、未燃焼燃料が酸化燃焼されて排気ガスがクリーンになる。なお、完全燃焼すれば、ススやタールの堆積がなくなるので装置が損耗せずメンテナンスが楽で、装置の寿命も伸びる。

【図面の簡単な説明】

【図1】は吸気の概略図

【図2】は排気の概略図

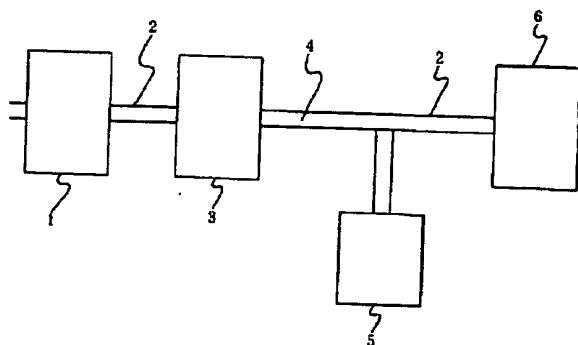
【符号の説明】

- 1.....クリーナー
- 2.....吸気管
- 3.....オゾン発生機
- 4.....オゾン気
- 5.....キャブレター
- 6.....エンジン
- 7.....排気管
- 8.....排気ガス
- 9.....オゾン発生機(3とは別)
- 10.....オゾン気(4とは別)
- 11.....ベンチュリー部
- 12.....触媒コンバーター
- 13.....排気口

(3)

特開平4-276167

【図1】



【図2】

